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In Re Application of:		
Inventors:	Srinivas Kandala	
Serial No.:	10/648,084	ATTORNEY FILE NO. SLA1324
Filed:	August 26, 2003	
		Customer No.: 55,286
Title:	SYSTEM AND METHOD FOR SYNCHRONIZING AN IEEE 802.11 POWER-SAVE INTERVAL	Examiner: Churnet, Dargaye H. Art Unit: 2616 Confirmation No.: 2760

Board of Patent Appeals and Interferences
United States Patent and Trademark Office
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BRIEF ON APPEAL

This is an appeal from the rejection by Examiner Dargaye H. Churnet, Group Art Unit 2616, of claims 1-36 as set forth in the CLAIMS APPENDIX.

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REAL PARTY IN INTEREST

The real party in interest is Sharp Laboratories of America, Inc., as assignee of the present application by an Assignment in the United States Patent Office, with a recordation date of August 26, 2003 at Reel 014445, Frame 0285.

RELATED APPEALS AND INTERFERENCES

None.

STATUS OF THE CLAIMS

Claims 1-36 are in the application.

Claims 1-36 are rejected.

Claims 1-36 are appealed.

STATUS OF AMENDMENTS

Amendments to the claims were made in an Office Action response received at the PTO on August 26, 2007. These claim amendments have been entered.

SUMMARY OF CLAIMED SUBJECT MATTER

The present invention addresses the general problem of synchronizing an access point (AP) with a quality-of-service (QSTA) in an IEEE 802.11 network. If the AP receives an acknowledgement from a QSTA in response to sending a frame during a "service period", there is no problem. However, if the QSTA never receives the transmission from the AP, or if the AP fails to "hear" the acknowledgement from the QSTA, then the AP may retransmit the frame multiple times. Because of these AP retransmissions, the start of the service period is unknown. As a result, there is no means for establishing a service period synchronization that can be used by the AP, as the AP may not be sure of how long must wait before it must transmits frames to the QSTA. Likewise, if the AP cannot establish a service period, the QSTA cannot establish a block of time in which it is guaranteed not to receive a transmission. Because of this lack of guaranteed service interval, the QSTA cannot periodically shut down to save power, even when there are long intervals between AP transmissions. Alternately, if the QSTA does shut down after receiving a transmission, the QSTA may lose synchronization with the AP polling schedule (specification- page 1, line 22 through page 2, line 9). The claimed invention is a mechanism that establishes a service interval timing known by both the AP and the QSTA.

Claim 1 recites a process for coordinating a power-save interval in an IEEE 802.11 wireless network (specification page 11, line 22 through page 12, line 12; Fig. 5). In Step 502 a first frame is transmitted from an AP to a QSTA (specification- page 12, lines 3-4; Fig. 5). In Step 504 an acknowledgement is received from the QSTA, indicating the receipt of the first frame (specification- page 12, line 4-5;

Fig. 5). In Step 506 the first frame is retransmitted from the AP to the QSTA in response to receiving the acknowledgement (specification- page 12, lines 5-7; Fig. 5). Step 510 times the next minimum service interval in response to the retransmitted first frame (specification- page 12, lines 9-10; Fig. 5).

Claim 9 recites a method for a QSTA to synchronize a power-save interval in an IEEE 802.11 wireless network (specification- page 13, lines 16-26; Fig. 6). In Step 602 a QSTA receives a first frame from an AP (specification- page 13, lines 18-19; Fig. 6). In Step 604 an acknowledgement is sent to the AP, indicating receipt of the first frame (specification- page 13, lines 19-20; Fig. 6). In Step 606 a retransmitted first frame is received from the AP (specification- page 13, line 23; Fig. 6). In Step 608 an acknowledgement is sent to the AP, responsive to receiving the retransmitted first frame (specification- page 13, lines 24-25; Fig. 6). In Step 610 the next minimum service interval is timed in response to the receipt of the retransmitted first frame (specification- page 13, lines 25-26).

Claim 18 recites a system for coordinating a power-save interval in an IEEE 802.11 wireless network (specification- page 5, line 20 through page 7, line 15; Fig. 2). An AP 202 includes a transceiver 206 having a wireless media port associated with reference designator 210 for transmitting and receiving frames (specification- page 5, lines 22-27; Fig. 2). The transceiver 206 also has a control port on line 208 to communicate transceived information (specification- page 5, lines 25-25; Fig. 2). A management unit 212 is connected to line 208 to manage transceiving. More explicitly, the management unit 212 orders the transmission of a first frame to QSTA 213, and the retransmission of the first frame in

response to the transceiver 206 receiving an acknowledgement of the first frame (specification- page 5, line 27 through page 6, line 5; Fig. 2). The management unit 212 has a timing port on line 214 to communicate timing information (specification- page 6, lines 5-7; Fig. 2). A timer 216 is connected to line 214 to initiate the timing of the minimum service interval for the management unit 212, in response to the receipt of the first frame acknowledgement (specification- page 6, lines 8-12; Fig. 2).

Claim 27 recites a system for synchronizing a power-save interval in an IEEE 802.11 wireless network (specification- page 8, lines 12-25; Fig. 3). A QSTA 213 has a transceiver 300 with a wireless media port associated with reference designator 210 for transmitting and receiving frames (specification- page 8, lines 14-16; Fig. 3). The transceiver 300 also has a control port on line 302 to communicate transceived information (specification- page 8, lines 16-17; Fig. 3). A management unit 304 is connected on line 302 to manage transceiving. The management unit 304 orders an acknowledgement in response to receiving a first frame from AP 202 (specification- page 8, lines 19-21; Fig. 3). The management unit 304 has a timing port on line 306 to communicate timing information (specification- page 8, lines 21-22; Fig. 3). A timer 308 is connected to line 306 to initiate the timing of the minimum service interval for the management unit 304, in response to the receipt of the retransmitted first frame (specification- page 8, lines 22-25; Fig. 3).

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

1. Whether claims 1-36 are incomplete under 35 U.S.C. 112, second paragraph, for omitting essential elements.

2. Whether claims 1, 9, 17, 18, 26, 27, and 36 are unpatentable under 35 U.S.C. 103(a) with respect to the admitted prior art in view of Sherman (US 6,831,912).

ARGUMENT

1. ***The rejection of claims 1-36 under 35 U.S.C. 112, second paragraph, as incomplete for omitting essential elements.***

CLAIMS 1-36

In Section 1 of the Final Office Action, claims 1-36 have been rejected under 35 U.S.C. 112, second paragraph, for omitting essential elements. The Office Action states that the omitted element is: timing the next minimum service interval in response to receiving the ACK for the retransmitted first frame, as shown in Fig. 5.

In response, the Applicant respectfully submits that no essential elements have been omitted from independent claims 1, 9, 18, and 27. As recited in independent claims 1, 9, and 27, the next minimum service interval is timed in response to the retransmitted first frame. Support for this statement can be found in the specification at page 12, lines 3-12 (Fig. 5), page 13, lines 23-26 (Fig. 6), and page 8, lines 12-25 (Fig. 3).

Step 510 does not require that the minimum service interval be timed in response to receiving an acknowledgement for the retransmitted first frame. As noted on page 12, lines 19-24:

> In some aspects a further step, Step 509 receives an acknowledgement responsive to the retransmitted first frame. Then, using the retransmitted first frame as the next minimum service interval timing reference in Step 510 includes *using the retransmitted first frame as a timing reference* (emphasis added) in response to receiving the retransmitted first frame acknowledgement.

Clearly the above-quoted section describes an option that may be performed. However, even if Step 509 is performed, Step 510 still requires that the retransmitted first frame be used as the timing reference. It would be possible to embody a version of the invention where the receipt of an acknowledgement is used to time the next minimum service interval. However, this embodiment is not recited by the Applicant in the base claims. Both the Applicant's specification and claims support an embodiment of the invention where the retransmitted first frame is used for timing. As written, the invention of claims 1, 9, and 27 can be practiced, regardless of whether an acknowledgement is received for the retransmitted first frame. Therefore, the limitation of "timing the next minimum service interval in response to receiving the ACK for the retransmitted first frame" is not an essential element to claims 1, 9, and 27. The Applicant notes that the embodiment suggested by the Examiner is covered in the Applicant's dependent claims (e.g., claim 3).

Claim 18 recites an embodiment of the invention where the AP times the minimum service interval in response to the receipt of the first frame acknowledgement. There is a linkage between receiving the first frame acknowledgement and retransmitting the first frame, since the first frame is retransmitted to the QSTA in response to receiving the first frame acknowledgement. Support for claim 18 can be found in the specification at page 5, line 20 through page 7, line 15 (Fig. 2). As with claims 1, 9, and 27, neither claim 18 nor the supporting specification requires that the interval timing be based upon first frame retransmission acknowledgement being received. Therefore, the limitation of "timing the

next minimum service interval in response to receiving the ACK for the retransmitted first frame" is not an essential element to claim 18.

2. ***The rejection of claims 1, 9, 17, 18, 26, 27, and 36 under 35 U.S.C. 103(a) as unpatentable with respect to the admitted prior art in view of Sherman (US 6,831,912).***

CLAIMS 1, 9, 17-18, 26-27, and 36

In Section 3 of the Final Office Action, claims 1, 9, 17, 18, 26, 27, and 36 have been rejected under 35 U.S.C. 103(a) as unpatentable with respect to admitted prior art, in view of Sherman (US 6,831,912). The Office Action acknowledges that the admitted prior art fails to disclose receiving an acknowledgement, and retransmitting the first frame in response to receiving the acknowledgement. The Office Action states that Sherman discloses the retransmission of a message in response to receiving an acknowledgement that packets were missed in an initial transmission, and that it would have been obvious to incorporate these elements of Sherman into the admitted prior art "...to assure all information is transmitted from source to destination."

An invention is unpatentable if the differences between it and the prior art would have been obvious at the time of the invention. As stated in MPEP § 2143, there are three requirements to establish a *prima facie* case of obviousness.

First, there must be some suggestion or motivation, either in the references themselves or in the

> knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. *In re Vaeck* 947 F.2d 488, 20 USPQ2d, 1438 (Fed. Cir. 1991).

In his description of Fig. 2, Sherman discloses a process of sending a data message (84) from an aircraft server to a ground station client, and sending an acknowledgement (86) from the client to the server. The acknowledgment specifies the particular packets that were missed in the previous data message 86 (col. 12, ln. 29-38). After receipt of the acknowledgement 86, the server transmits an additional datagram message 88, which includes the packets that were missed by the client (col. 12, ln. 51-56).

The Office Action states that Sherman discloses resending the first frame, as Sherman resends a datagram with packets that were not received in the initial datagram. Since Sherman's second transmission only resends missing packets, it is necessary different from his first transmission. Therefore, Sherman does not disclose resending his initial transmission. Alternately stated, Sherman is absolutely silent on the subject of retransmitting a frame that was successfully received. Sherman is also silent on the subject of using a retransmitted message for the purpose of synchronization in general, or specifically for the purpose of timing a service interval period.

The obviousness rejection appears to be based upon the assumption that the combination of the admitted prior art and Sherman

discloses all the limitations of the base claims 1, 9, 18, and 27. The Applicant's base claims recite a process that retransmits a frame after receiving an acknowledgement that the frame was received. This retransmission begins the timing of a minimum service interval, which is known by both parties, and which permits a power-save interval to be established. Neither the admitted prior art nor Sherman discloses the retransmission of a first frame, the establishment of minimum service interval, or the timing of a service interval based upon the retransmission of a first frame, as recited in claims 1, 9, and 27. Neither the admitted prior art nor Sherman discloses the retransmission of a first frame, the establishment of minimum service interval, or the timing of a service interval based upon the acknowledgement of the first frame, as recited in claim 18. With respect to the third *prima facie* requirement, even if it would have been obvious incorporate Sherman's system of retransmitting missed data into conventional IEEE 802.11 protocols, that combination still fails to disclose the above-mentioned synchronization limitations recited in the Applicant's base claims. Claim 17, dependent from claim 9, claim 26, dependent from claim 18, and claim 36, dependent from claim 27, enjoy the same distinctions.

With respect to the first *prima facie* requirement, the Office Action states that it would have been obvious to incorporate the retransmission of missed data (Sherman) into the admitted prior art "...to assure all information is transmitted from source to destination. However, even if this assertion was correct, it does not explain how a practitioner in the art could have modified the admitted prior art to use the retransmission of a successfully received frame as the trigger for

timing a service interval. The test is not whether there is a motivation to combine prior art references, but rather, does the combination of references suggest a modification that makes the claimed invention obvious.

As noted in MPEP 2142:

> The legal concept of *prima facie* obviousness is a procedural tool of examination which applies broadly to all arts. It allocates who has the burden of going forward with production of evidence in each step of the examination process. See *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); *In re Linter*, 458 F.2d 1013, 173 USPQ 560 (CCPA 1972); *In re Saunders*, 444 F.2d 599, 170 USPQ 213 (CCPA 1971); *In re Tiffin*, 443 F.2d 394, 170 USPQ 88 (CCPA 1971), *amended*, 448 F.2d 791, 171 USPQ 294 (CCPA 1971); *In re Warner*, 379 F.2d 1011, 154 USPQ 173 (CCPA 1967), *cert. denied*, 389 U.S. 1057 (1968). The examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. If the examiner does not produce a *prima facie* case, the applicant is under no obligation to submit evidence of nonobviousness.

This analysis is especially relevant if the combination of prior art references does not explicitly disclose every limitation of the claimed invention, as is evident in this case. As noted above in response to the third *prima facie* requirement, even when combined, the references do not disclose all the limitations of claims 1, 9, 18, and 27.

More explicitly, the Office Action acknowledges that the admitted prior art fails to show the retransmission of a first frame in response to receiving an acknowledgement. Although Sherman discloses an acknowledgment that specifies the packets that were missed in the previous data message, no evidence has been provided that Sherman includes the additional limitations of retransmitting the first frame. Rather, Sherman discloses the transmission of a datagram message that

includes the packets missed in the initial transmission. Sherman does not retransmit a successfully received frame. More critically, Sherman does not disclose using the acknowledgement or a retransmission for the purposes of establishing a minimum timing interval. These limitations are not specifically mentioned in the Sherman reference. Neither are these limitations suggested since Sherman does not disclose the need or desirability of creating a minimum service interval.

Alternately, the Examiner may rely upon the knowledge of a person with skill in the art to supply motivation lacking the admitted prior art and Sherman references. "(A)nalysis [of whether the subject matter of a claim would have been obvious] need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ." *KSR Int'l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727, 1740-41, 82 USPQ2d 1385, 1396 (2007). However, if the *prima facie* rejection is supported by what was known by a person of ordinary skill in the art then additional evidence should have been provided. Notable, when the source or motivation is not from the prior art references, "the evidence" of motive will likely consist of an explanation or a well-known principle or problem-solving strategy to be applied". *DyStar*, 464 F.3d at 1366, 80 USPQ2d at 1649. The Examiner has not supplied evidence that the retransmission of the first frame in an IEEE 802.11 network would have been known by an artisan as a trigger for timing a minimum service interval. Neither has evidence been provided that an artisan would have found such a feature desirable.

Considered from the perspective of the second *prima facie* requirement, even if an expert were given the admitted prior art and Sherman references as a foundation, no evidence has been provided to show that there is a reasonable expectation of success in the claimed invention. That is, there can be no reasonable expectation of success if the prior art references, and what was known by artisan at the time of the invention, do not teach all the limitations of the claimed invention.

In summary, the Applicant respectfully submits that a *prima facie* case of obvious has not been supported since the combination of references does not explicitly disclose every limitation of claims 1, 9, 18, and 27. Neither has a case been supported that the admitted prior art can be modified to supply the missing limitations in view of Sherman. Finally, a case has not been supported that the admitted prior art can be modified to supply the missing limitations in view of what was known by a person of skill at the time of the invention.

SUMMARY AND CONCLUSION

It is submitted that for the reasons pointed out above, the claims in the present application clearly and patentably distinguish over the cited references. Accordingly, the Examiner should be reversed and ordered to pass the case to issue.

The fee for filing this Appeal Brief is authorized in an accompanying PTO-2038 credit card form.

Respectfully submitted,

Date: 10/16/2007

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CLAIMS APPENDIX

IN THE CLAIMS:

1. (previously presented) In an IEEE 802.11 wireless network, a method for coordinating a power-save interval, the method comprising:

transmitting a first frame from an access point (AP) to a quality of service station (QSTA);

receiving an acknowledgement from the QSTA, indicating receipt of the first frame;

in response to receiving the acknowledgement, retransmitting the first frame from the AP to the QSTA; and,

timing the next minimum service interval in response to the retransmitted first frame.

2. (previously presented) The method of claim 1 further comprising:

in response to receiving the first frame acknowledgement, identifying the retransmitted first frame as the last frame in a transmission queue; and,

wherein timing the next minimum service interval in response to the retransmitted first frame includes using the retransmitted first frame as the next minimum service interval timing reference.

3. (original) The method of claim 2 further comprising:

receiving an acknowledgement responsive to the retransmitted first frame; and,

wherein using the retransmitted first frame as the next minimum service interval timing reference includes using the retransmitted first frame as a timing reference in response to receiving the retransmitted first frame acknowledgement.

4. (previously presented) The method of claim 3 further comprising:

failing to receive the acknowledgement from the QSTA in response to transmitting the first frame; and,

retransmitting the first frame until the acknowledgement is received.

5. (original) The method of claim 4 further comprising:

following the minimum service interval, transmitting a polling frame from the AP to the QSTA.

6. (original) The method of claim 5 further comprising:

prior to transmitting the first frame, receiving a transmit specification (TSPEC) from the QSTA; and,

transmitting frames from the AP to the QSTA at a schedule responsive to the TSPEC.

7. (previously presented) The method of claim 6 wherein transmitting the frames from the AP to the QSTA at the schedule responsive to the TSPEC includes transmitting voice over Internet

protocol (VoIP) traffic at a schedule of approximately 20 milliseconds between frames.

8. (previously presented) The method of claim 2 wherein transmitting the first frame from the AP to the QSTA includes setting a More Data subfield in a Frame Control field of the first frame header to a value of "1"; and,

wherein identifying the retransmitted first frame as the last frame in the transmission queue includes setting the More Data subfield to the value of "0".

9. (previously presented) In an IEEE 802.11 wireless network, a method for a quality of service remote station (QSTA) to synchronize a power-save interval, the method comprising:

at a QSTA, receiving a first frame from an access point (AP);

sending an acknowledgement to the AP, indicating receipt of the first frame;

receiving a retransmitted first frame from the AP;

sending an acknowledgement to the AP responsive to receiving the retransmitted first frame; and,

timing the next minimum service interval in response to the receipt of the retransmitted first frame.

10. (previously presented) The method of claim 9 wherein receiving the retransmitted first frame from the AP includes:

receiving the retransmitted first frame in response to sending the acknowledgement; and,

identifying the retransmitted first frame as the last frame in a transmission queue; and,

wherein timing the next minimum service interval in response to the receipt of the retransmitted first frame includes using the retransmitted first frame as the next minimum service interval timing reference.

11. (original) The method of claim 10 further comprising:

following the minimum service interval, receiving a polling frame from the AP to the QSTA.

12. (original) The method of claim 9 further comprising:

engaging a power-saving mode during the minimum service interval.

13. (original) The method of claim 12 further comprising:

prior to receiving the first frame, transmitting a transmit specification (TSPEC) to the AP; and,

receiving frames from the AP a schedule responsive to the TSPEC.

14. (previously presented) The method of claim 13 wherein receiving frames from the AP at the schedule responsive to the

TSPEC includes receiving voice over Internet protocol (VoIP) traffic at a schedule of approximately 20 milliseconds (ms) between frames.

15. (previously presented) The method of claim 14 wherein engaging the power-saving mode during the minimum service interval includes engaging the power-saving mode for approximately 14 ms between frames.

16. (previously presented) The method of claim 10 wherein receiving the first frame from the AP includes receiving a "1" bit in a More Data subfield of a Frame Control field in the first frame header; and,

wherein identifying the retransmitted first frame as the last frame in the transmission queue includes receiving a "0" bit in the More Data subfield.

17. (previously presented) The method of claim 9 further comprising:

following the sending of the acknowledgement to the AP, remaining enabled to receive subsequent transmissions.

18. (previously presented) In an IEEE 802.11 wireless network, a system for coordinating a power-save interval, the system comprising:

an access point (AP) including:

a transceiver having a wireless media port for transmitting and receiving frames and a control port to communicate transceived information;

a management unit having a signal port connected to the transceiver control port to manage transceiving, the management unit ordering the transmission of a first frame to a quality of service station (QSTA), and the retransmission of the first frame in response to the transceiver receiving an acknowledgement of the receipt of the first frame, the management unit having a timing port to communicate timing information; and,

a timer having a port connected to the management unit timing port to initiate the timing of a minimum service interval for the management unit in response to the receipt of the first frame acknowledgement.

19. (previously presented) The system of claim 18 wherein the management unit orders the transceiver to identify the retransmitted first frame as the last frame in a transmission queue in response to receiving the acknowledgement, and,

wherein the timer uses the retransmitted first frame as the next minimum service interval timing reference.

20. (original) The system of claim 19 wherein the management unit receives an acknowledgement for the retransmitted first frame and orders the timer to use the retransmitted first frame as the next minimum service interval timing reference in response to receiving the retransmitted first frame acknowledgment.

21. (previously presented) The system of claim 20 wherein the management unit, in response to failing to receive the acknowledgement of the transmitted first frame, orders the transceiver to retransmit the first frame until the acknowledgement is received.

22. (original) The system of claim 21 wherein the management unit, following the receipt of a minimum service interval message from the timer, orders the transceiver to transmit a polling message to the QSTA.

23. (original) The system of claim 22 wherein the management unit receives a transmit specification (TSPEC) from the QSTA, and orders the transceiver to transmit frames to the QSTA at a schedule responsive to the TSPEC.

24. (original) The system of claim 23 wherein the management unit orders the transmission of voice over Internet protocol (VoIP) at a schedule of approximately 20 milliseconds between frames.

25. (previously presented) The system of claim 19 wherein the management unit orders the transceiver to set a "1" bit in the More Data subfield of a Frame Control field in the first frame header and to set a More Data subfield to the value of "0" in the retransmitted first frame, in response to receiving the acknowledgement.

26. (previously presented) The system of claim 18 further comprising:

a QSTA including:

a transceiver having a wireless media port for transmitting and receiving frames and a control port to communicate transceiving information;

a management unit having a signal port connected to the transceiver control port to manage transceiving, the management unit ordering acknowledgements sent in response to receiving a first frame in a transmission from the AP, the management unit having a timing port to communicate timing information; and,

a timer having a port connected to the management unit timing port to initiate the timing of the minimum service interval for the management unit in response to the receipt of the retransmitted first frame.

27. (previously presented) In an IEEE 802.11 wireless network, a system for synchronizing to a power-save interval, the system comprising:

a quality of service station (QSTA) including:

a transceiver having a wireless media port for transmitting and receiving frames and a control port to communicate transceived information;

a management unit having a signal port connected to the transceiver control port to manage transceiving, the management unit receiving a transmitted and retransmitted first

frame and ordering an acknowledgement sent in response to receiving the first frame transmission from an access point (AP), the management unit having a timing port to communicate timing information; and,

a timer having a port connected to the management unit timing port to initiate the timing of a minimum service interval for the management unit in response to the receipt of the retransmitted first frame.

28. (previously presented) The system of claim 27 wherein the management unit identifies the retransmitted first frame as the last frame in a transmission queue; and,

wherein the timer uses the retransmitted first frame as the next minimum service interval timing reference.

29. (original) The system of claim 28 wherein the management unit sends an acknowledgement to the AP in response to receiving the retransmitted first frame.

30. (original) The method of claim 29 wherein the management unit order the transceiver to engage a power-save mode in response to receiving the retransmitted first frame.

31. (original) The system of claim 30 wherein the management unit receives a minimum service interval massage from the timer and orders the transceiver to disengage the power-save mode in response to receiving the minimum service interval message.

32. (original) The system of claim 31 wherein the management unit, prior to receiving the first frame, orders the transceiver to transmit a transmit specification (TSPEC) to the AP; and,

wherein the transceiver receives frames from the AP at a schedule responsive to the TSPEC.

33. (original) The system of claim 32 wherein the transceiver receives voice over Internet protocol (VoIP) traffic at a schedule of approximately 20 milliseconds (ms) between frames.

34. (original) The system of claim 33 wherein management unit orders the engagement of the power-saving mode for approximately 14 ms between frames.

35. (previously presented) The system of claim 28 wherein the transceiver receives the first frame from the AP with a "1" bit in a More Data subfield of a Frame Control field in the first frame header, and receives the retransmitted first frame with a "0" bit in the More Data subfield; and,

wherein the management unit identifies the retransmitted first frame as the last frame in the transmission queue in response to the "0" bit in the More Data subfield.

36. (original) The system of claim 27 further comprising:

an access point (AP) including:

a transceiver having a wireless media port for transmitting and receiving frames and a control port to communicate transceiving information;

a management unit having a signal port connected to the transceiver control port to manage transceiving, the management unit ordering the transmission of the first frame to the QSTA, and the retransmission of the first frame in response to the transceiver receiving an acknowledgement of the first frame, the management unit having a timing port to communicate timing information; and,

a timer having a port connected to the management unit timing port to initiate the timing of the minimum service interval for the management unit in response to the receipt of the first frame acknowledgement.

EVIDENCE APPENDIX

NONE

RELATED PROCEEDINGS APPENDIX

NONE